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| 09/421,332 | 10/18/99 | SAKAI | K 0557-4628-2- |
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EXAMINER

PHAN, J

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 03/27/01

03/27/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/421,332

Applicant(s)

SAKAI ET AL.

Examiner

Phan, J.

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☐ Responsive to communication(s) filed on 26 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 10-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 14) ☐ Notice of References Cited (PTO-892)
- 15) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 17) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other:

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DETAILED ACTION

Continued Prosecution Application

1. The request filed on 2/26/01 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/421,332 is acceptable and a CPA has been established. An action on the CPA follows.

Specification

2. The disclosure is objected to because of the following informalities: the teachings in the specification should not be referred to the claims. See column 4, line 25, and column 5, line 48.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-7 and 10-15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1-7 and 10-15 contain a new matter since nowhere in the original disclosure is there a support for the multi-beam optical scanner having met the condition $2 < \beta < 8.5$ without a coupling lens. The original disclosure requires the multi-beam optical scanner to have a coupling
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lens, a first image-formation system, and a second image-formation system in order to satisfy the condition. See column 3, lines 13-15 and column 6, lines 16-26; also, see column 3, line 61 through column 4, line 5.

4. Claims 1-7 and 10-15 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a multi-beam optical scanner which comprises a coupling/collimate lens, a first image-formation system, a second image-formation system, and satisfies a lateral magnification of greater than 2 and less than or equal to 8.5, does not reasonably provide enablement for a multi-beam optical scanner which satisfies a lateral magnification of greater than 2 and less than or equal to 8.5 without the use of a coupling/collimate lens. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. How would one skilled in the art make a multi-beam optical scanner which satisfies a lateral magnification of greater than 2 and less than 8.5 without a coupling/collimate lens?

5. Claims 1-7 and 10-15 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A coupling/collimate lens is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The lateral magnification of the optical scanner is decided by means of a magnification of the coupling lens and the first image-formation system (column 3, line 61 through

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column 4, line 5). Therefore, omitting the coupling/collimate lens the characteristics, i.e. divergency, width, etc., of each light flux entering the first image-formation system are changed; and thus, the lateral magnification of the optical scanner would be changed and would not be greater than 2 and less than 8.5.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-6 and 10-15 are rejected under 35 U.S.C. 102(a) as being anticipated by Appel et al.

Appel et al discloses an image forming apparatus (50) which comprises a multi-beam optical scanner (Figs. 1-3). The multi-beam optical scanner comprises a light source (multiple laser diode 56) for providing light beams A and B, a coupling lens (84) for collimating light beams A and B, a first image-formation system (cylindrical lens 88) for forming line images on the reflecting surface 92 of an optical deflector (rotating polygon mirror 60), and a second image-formation system (f-theta scan lens 94, cylindrical mirror 98) for separating the light beams A and B and converging the light beams into light spots for scanning a scanned surface (photoreceptor 64). Appel et al further discloses that alternative to interlaced scan lines forming, the scanning light spots can form consecutive, or in-pitch , scan lines during each scan (column 5, lines 53-55); and that the separation between adjacent scan lines is maintained at 127 micrometer (abstract, last sentence). Since the dual diodes are separate by a distance

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of 25 micrometer, the multi-beam optical scanner having a lateral magnification of 127/25 or 5.08 which is within the claimed range.

In re claim 6 "a cylinder lens" or "a toroid lens" (claim 13 in column 9) has been taken as a lengthy lens.

In re claims 10 and 11 see the teaching in column 7, line 76 through column 8, line 2. Note that the use of light source having LED light emitting sections in combination is a conventional alternative.

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Claims 1-6 and ¹⁰~~8~~-15 are rejected under 35 U.S.C. 102(a) as being anticipated by Genovese.

Genovese discloses an image forming apparatus (50) which comprises a multi-beam optical scanner. The multi-beam optical scanner comprises a light source (multiple laser diode 56) for providing light beams A and B, a coupling lens (70) for collimating light beams A and B, a first image-formation system (cylindrical lens 72, see column 4, lines 55-56) for forming line images on the reflecting surface 92 of an optical deflector (rotating polygon mirror 60, see column 5, lines 14-21), and a second image-formation system (f-theta scan lens 80 and wobble cylindrical lens 82) for separating the light beams A and B and converging the light beams into light spots for scanning a scanned surface (photoreceptor 64). The multi-beam optical scanner having a lateral magnification of 127/25 or 5.08. See Figs. 1-2 and the accompanying text. Note that Genovese does not limit his invention to only use light beams emitted from the multiple

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beam light source for forming interlaced scan lines on the photoreceptor 64; thus, the feature "the plurality of light spots on the scanned surface optically scan scanning lines adjacent to each other on plural consecutive scans" (see evidence claim 1 in column 7) is inherently disclosed.

In re claim 6 lens 82 has been taken as a lengthy lens.

In re claims 10 and 11 see the teaching in column 4, lines 9-11. Note that the use of light source having LED light emitting sections in combination is a conventional alternative.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Appel et al or Genovese in view of Kamikubo.

Each of Appel et al and Genovese discloses a multi-beam optical scanner having all the structure as discussed in the rejections of claims 1-6 and 9-15 under 35 USC 102(a) on pages 4-6. The difference between claim 7 and Appel et al or Genovese is that while claim 7 uses an image-forming mirror and a lengthy lens for the second image-formation system, Appel et al and Genovese use f-theta scan lens. However, the

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use of an image-forming mirror and a lengthy lens instead of f-theta scan lens is a well known alternative (see the use of image-forming mirror 40 and lengthy lens 41 instead of f-theta scan lens 20 in Kamikubo, column 6, line 65 through column 7, line 3). Thus, it would have been obvious to one skilled in the art to replace the f-theta scan lens in each of Appel et al and Genovese with an image-forming mirror and a lengthy lens as an alternative for the common feature.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Phan whose telephone number is (703) 308-4810. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Phan, J.
March 24, 2001


James Phan
Primary Examiner